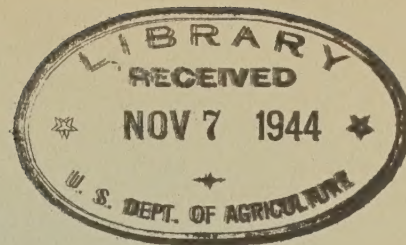


Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

1-9
Encl 61A
Cop. 2

Puerto Rico Experiment Station
of the
United States Department of Agriculture



AGRICULTURAL NOTES

No. 85

MAYAGUEZ, P.R. MARCH 12, 1938

THE INTRODUCTION INTO PUERTO RICO OF A PARASITE OF THE WHITE SCALE OF PAPAYA

BY

KENNETH A. BARTLETT, ASSISTANT ENTOMOLOGIST
DIVISION OF FOREIGN PARASITE INTRODUCTION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
UNITED STATES DEPARTMENT OF AGRICULTURE /A

WHITE SCALE IS DESTRUCTIVE TO PAPAYA AND OTHER PLANTS.

THE WHITE SCALE, AULACASPIS PENTAGONA (TARGIONI), COMMONLY OBSERVED ON THE TRUNKS OF PAPAYA, IS A DESTRUCTIVE PEST OF THIS PLANT. THE TRUNK IS OFTEN COMPLETELY COVERED BY THOUSANDS OF INDIVIDUAL SCALES WHICH SUCK THE SAP FROM THE SURFACE CELLS AND THUS DEVITALIZE THE WHOLE PLANT. THIS INSECT ALSO ATTACKS A LARGE NUMBER OF OTHER PLANTS, ECONOMIC AND ORNAMENTAL, BOTH HERE AND IN THE CONTINENTAL UNITED STATES, IN WHICH LATTER PLACE IT IS COMMONLY KNOWN AS THE WEST INDIAN OR WHITE PEACH SCALE. THE THICK, CIRCULAR, SLIGHTLY CONVEX SCALES ARE THE COVERINGS OF THE FEMALES, WHILE THE THINNER, ELONGATE, MORE DISTINCTLY WHITE ONES ARE THOSE OF THE MALES.

IN PUERTO RICO COMMONLY OBSERVED HOSTS OF THIS INSECT, IN ADDITION TO THE PAPAYA, CARICA PAPAYA, ARE ALLAMANDA, ALLAMANDA CATHARTICA VAR. HENDERSONI, ORANGE, CITRUS SINENSIS, AND MANGO, MANGIFERA INDICA.

NATIVE SPECIES OF PARASITES ATTACK THE PAPAYA SCALE.

IN PUERTO RICO THE WHITE SCALE OF PAPAYA IS KNOWN TO BE ATTACKED BY THREE SPECIES OF HYMENOPTEROUS PARASITES, NAMELY, ASPIDIOTIPHAGUS LOUNSBURYI BERLESE AND PAOLI, ASPIDIOTIPHAGUS CITRINUS (CRAW), AND PROSPALTELLA DIASPIDICOLA SILVESTRI.

/A NOW ASSOCIATE ENTOMOLOGIST, PUERTO RICO EXPERIMENT STATION, UNITED STATES DEPARTMENT OF AGRICULTURE.

THE LAST TWO SPECIES HAVE BEEN REARED BY THE WRITER FROM NUMEROUS COLLECTIONS. THE SCALE IS ALSO REPORTED TO BE EATEN BY THE LARVAE OF A SPECIES OF MOTH, EREUNETIS MINUSCULA WALSINGHAM. HOWEVER, NONE OF THESE NATIVE BENEFICIAL INSECTS HAVE ADEQUATELY REDUCED THE DAMAGED CAUSED BY THIS SCALE.

PARASITE OF PAPAYA SCALE WAS INTRODUCED FROM LOUISIANA.

IN THE SOUTHERN PART OF THE UNITED STATES THIS SCALE IS PARASITIZED BY A SMALL HYMENOPTEROUS PARASITE, PROSPALTELLA BERLESEI (HOWARD). AS THIS PARASITE HAD NOT BEEN FOUND ATTACKING AULACASPIS PENTAGONA IN PUERTO RICO IT SEEMED ADVISABLE TO INTRODUCE IT HERE. THIS PROJECT WAS CARRIED ON BY THE BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE AND THE PUERTO RICO EXPERIMENT STATION AS PART OF THE PROGRAM TO INTRODUCE PARASITES OF INJURIOUS INSECT PESTS INTO PUERTO RICO.

COLLECTIONS OF PEACH TWIGGS HEAVILY INFESTED WITH AULACASPIS PENTAGONA WERE MADE IN THE VICINITY OF TALLULAH, LOUISIANA, BY R. C. GAINES OF THE BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE. TWO SHIPMENTS OF MATERIAL WERE SENT TO PUERTO RICO, ONE BEING RECEIVED ON FEBRUARY 1, 1936, AND THE OTHER ON APRIL 26, 1937. AS THE SCALE HAD BEEN FIELD COLLECTED BOTH SHIPMENTS WERE DOUBLY CAGED TO PREVENT THE ESCAPE OF ANY SECONDARY PARASITES AND OTHER NATURAL ENEMIES OF THIS OR ANY OTHER BENEFICIAL INSECT THAT MIGHT EMERGE. FROM THE FIRST SHIPMENT THERE EMERGED 1,561 SPECIMENS OF PROSPALTELLA BERLESEI AND FROM THE SECOND 863 SPECIMENS.

ONE GENERATION OF PARASITES WAS REARED UNDER CAGE CONDITIONS.

A CLOTH CAGE WAS CONSTRUCTED BY PLACING A WIRE CYLINDER 1 FOOT IN DIAMETER BY 3 FEET IN LENGTH COVERED WITH MUSLIN ABOUT THE TRUNK OF A PAPAYA TREE HEAVILY INFESTED WITH THE WHITE SCALE, AULACASPIS PENTAGONA. A TOTAL OF 377 ADULTS OF THE PARASITE, PROSPALTELLA BERLESEI, WERE THEN INTRODUCED INTO THIS CAGE FROM FEBRUARY 3 TO 6, 1936, INCLUSIVE. ON MARCH 2 THE CAGE WAS REMOVED AND THE PORTION OF THE PAPAYA TRUNK BEARING THE SCALES THAT WERE EXPOSED TO P. BERLESEI WAS CUT OUT AND PLACED NEAR SCALE-INFESTED PAPAYA PLANTS IN THE FIELD SO THAT THE PARASITES AS THEY EMERGED COULD SCATTER AND ATTACK THE SCALE ON THE SURROUNDING PLANTS.

PAPAYA SCALE PARASITE WAS LIBERATED IN PUERTO RICO.

TWO DIRECT RELEASES OF PROSPALTELLA BERLESEI WERE MADE DURING 1936. THE FIRST RELEASE, CONSISTING OF 657 SPECIMENS, WAS MADE AT THE PUERTO RICO EXPERIMENT STATION AT MAYAGUEZ FROM FEBRUARY 8 TO 20, INCLUSIVE; THE OTHER, CONSISTING OF 79 SPECIMENS, WAS MADE AT THE SUB-STATION OF THE INSULAR EXPERIMENT STATION AT ISABELA ON FEBRUARY 7. THE SCALE-INFESTED TRUNK EXPOSED TO ADULTS OF P. BERLESEI FOR REARING PURPOSES WAS PLACED IN THE MIDST OF A PAPAYA PLANTING HEAVILY INFESTED WITH AULACASPIS PENTAGONA AT ISABELA ON MARCH 2. A SECOND LIBERATION ON THE EXPERIMENT STATION GROUNDS AT MAYAGUEZ CONSISTED OF 773 ADULTS OF P. BERLESEI AND WAS MADE DURING APRIL AND MAY, 1937.

THE FIRST OF THESE IS THE FACT THAT THE
RECORDS OF THE DEPARTMENT OF THE INTERIOR
SHOW THAT THE LANDS WERE ACQUIRED BY THE
UNITED STATES GOVERNMENT IN 1864.

THE SECOND FACT IS THAT THE LANDS WERE
ACQUIRED BY THE UNITED STATES GOVERNMENT
IN 1864, AND THE LANDS WERE ACQUIRED
BY THE UNITED STATES GOVERNMENT IN 1864.

THE THIRD FACT IS THAT THE LANDS WERE
ACQUIRED BY THE UNITED STATES GOVERNMENT
IN 1864, AND THE LANDS WERE ACQUIRED
BY THE UNITED STATES GOVERNMENT IN 1864.

THE FOURTH FACT IS THAT THE LANDS WERE
ACQUIRED BY THE UNITED STATES GOVERNMENT
IN 1864, AND THE LANDS WERE ACQUIRED
BY THE UNITED STATES GOVERNMENT IN 1864.

THE FIFTH FACT IS THAT THE LANDS WERE
ACQUIRED BY THE UNITED STATES GOVERNMENT
IN 1864, AND THE LANDS WERE ACQUIRED
BY THE UNITED STATES GOVERNMENT IN 1864.